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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,783	07/21/2003	Todd P. Oman	DP-309847	6095

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EXAMINER	
DATSKOVSKIY, MICHAEL V	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/623,783	OMAN ET AL.	
	Examiner	Art Unit	
	Michael V. Datskovskiy	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 7, 15-18, 20-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the structure shown by the applicant in Fig. 1, and identified as a "Prior Art" (further: "Figure 1") in view of Yoshikawa (US Patent 6,046,498).

Figure 1 teaches a thermally enhanced electronic module, comprising: a thermally conductive case 12; a self-aligning thermally conductive heat sink 14; and a die 16 with a first surface and a second surface opposite the first surface, wherein the die 16 is mounted to a substrate 24 with the first surface of the die facing the substrate 24, and the second surface in thermal contact with the heat sink 14. Figure 1 teaches furthermore said module further comprising an elastomer member 26 disposed between the substrate and the thermally conductive metal case 12. Figure 1 does not teach said case including a substantially semi-spherical pivot concave area formed into the case for receiving a first portion of the heat sink, said first portion of the heat sink being convexly complimentary to said substantially semi-spherical pivot area formed into the

case. Figure 1 also does not teach said module further comprising a thermally conductive film located between the die and the heat sink, and one of thermally conductive grease and a thermally conductive adhesive located between the case and the heat sink. Self-aligned semi-spherical heat sink blocks are well known in the art (see the pertinent Prior Art submitted by the examiner in the first Office Action). Yoshikawa teaches a thermally enhanced electronic module, Fig.7, comprising: a self-aligning thermally conductive heat sink 310; and a die 120 with a first surface and a second surface opposite the first surface, wherein the die 120 is mounted to a ceramic substrate 110 with the first surface of the die facing the substrate 110, and the second surface in thermal contact with the heat sink 310. Yoshikawa teaches furthermore said module further comprising a substantially semi-spherical pivot concave area 221 formed into the case 210 for receiving a first portion 312 of the heat sink 310, said first portion 312 of the heat sink 310 being convexly complimentary to said substantially semi-spherical pivot area 221 formed into the case 210. Yoshikawa also teaches said module further comprising a thermally conductive film 400 located between the die and the heat sink, and a thermally conductive adhesive (solder) 500 located between the case and the heat sink, which solidifies after self-aligning of the heat sink 310. It would have been obvious to one skilled in the art at the time invention was made to employ a self-aligning heat sink including a substantially semi-spherical pivot concave area formed into the case for receiving a first portion of the heat sink, and a portion of the heat sink being convexly complimentary to said substantially semi-spherical pivot area formed into the case; and also a thermally conductive film located between the die and the heat sink,

and a thermally conductive adhesive located between the case and the heat sink, as it is shown by Yoshikawa in the device shown in Figure 1, in order to enhance heat dissipation of the module. Regarding to the claims 15-18, 20 and 23: The method steps are obviously necessitated by the device structure as Figure 1 and Yoshikawa teach it.

4. Claims 6, 8-14, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Figure 1 and Yoshikawa.

Regarding to the claims 8-12 and 22: Figure 1 and Yoshikawa teach all the limitations of the claim except said electronic module is an automotive electronic module. It would be obvious to one ordinary skilled in the art at the time invention was made to use the device described by Figure 1 and Yoshikawa in a car, since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ2d 1647 (1987).

Regarding to the claims 6, 13 and 19: Figure 1 and Yoshikawa teach all the limitations of the claim except said die (chip) includes at least one of a field effect transistors (FET), an insulated gate bipolar transistor (IGBT), a power flip chip and a power package. It would be obvious to one ordinary skilled in the art at the time invention was made to employ the cooling module described by Figure 1 and Yoshikawa to comprise one of the listed above types of chips, since applicant has not disclosed that type of chips solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with any type of a heat generating die or chip.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Datskovskiy whose telephone number is (571) 272-2040. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael V Datskovskiy
Primary Examiner
Art Unit 2835

08/08/2005